

**Background:** Changes in the levels of proteases such as matrix metalloproteases, calpains and cathepsins family are associated with adverse cardiac remodeling an underlying mechanism responsible for progression of heart failure in several cardiomyopathies. Dilated cardiomyopathy or DCM is one such type of heart muscle disorder characterized by ventricular dilation and impaired systolic function. The critical role of both cathepsin L (CTSL) and cathepsin B (CTSB) in maintaining normal cardiac physiology has been observed in several studies. However, no information was available on the status of these cysteine cathepsins in human peripheral blood mononuclear cells of DCM patients.

**Aim:** The aim of the present study was to detect the activity of cysteine cathepsins (L and B) in DCM patients and to investigate whether levels of these cathepsins exhibit any correlations with the critical clinical parameters associated with DCM.

**Methods:** Peripheral blood mononuclear cells isolated from DCM patients ( $n = 30$ ) along with corresponding age matched healthy controls ( $n = 30$ ) were used to study the enzymatic activity of cathepsin L and B using spectrofluorimetry. Further, a correlation analysis between the levels of these cathepsins with several clinical and echocardiographic parameters in small group of these DCM patients was carried out.

**Results:** The enzymatic activity of total cathepsins (L + B), cathepsin L and cathepsin B was found to be significantly higher (3 fold, 1.5 fold and 3.5 fold), respectively, in DCM patients as compared to healthy controls. Area under the curve estimated by ROC analysis was found to be 0.84, 0.85 and 0.80 for CTSL + B, CTSB and CTSL respectively, which implicated their diagnostic utility. Moreover, when DCM patients were divided into two subgroups on the basis of calculated cut off values for CTSL + B, CTSL and CTSB enzyme activity based on ROC analysis, high levels of CTSL + B and CTSB were found to be significantly associated with poor left ventricular ejection fraction (LVEF) and dilation of both left ventricle end-diastolic and systolic dimensions in DCM patients.

**Conclusion:** This study for the first time demonstrates an association between elevation of CTSL + B and CTSB activity in DCM patients with severity of this disease. Therefore measurement of these cysteine cathepsins level in blood could prove useful in the management of Human Dilated Cardiomyopathy.

## A case of right ventricular apical thrombus



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A 39-year-old male with no known modifiable coronary risk factors or significant past medical/family history, symptomatic since the past three months with episodic palpitations, presented on 07 February 2014 with a severe bout of palpitations, pre syncope and hypotension. Evaluation revealed sustained monomorphic ventricular tachycardia (VT) with right bundle branch block morphology which was promptly terminated with 200 J synchronized cardioversion successfully. Echocardiography revealed a dilated globally hypokinetic right ventricle (RV) having prominent moderator band and akinetic apex with a large (20 mm × 20 mm) sessile thrombus; the left ventricle was normal. His coronary angiogram and venous Doppler were normal but the cardiac MRI revealed fibrofatty infiltration of RV apex and free wall, suggesting a diagnosis of arrhythmogenic right ventricular cardiomyopathy (ARVC). He was treated with amiodarone and acitrome besides repeated DC shocks for recurrent VT. He was thrombolysed with tenecteplase 40 mg on 17 February 2014 with resolution of the RV apical thrombus, but the next day he developed right sided pleuritic chest pain and CT-thorax revealed acute pulmonary embolism with infarction in the lateral basal segment of right lower lobe. He responded to conservative management and on 23 February 2014 a single chamber AICD was implanted. He apparently had no recurrence of VT or thrombus till date. RV thrombus occurs due to diverse aetiologies and have a varied clinical presentation. Echocardiography is the main diagnostic modality. Anticoagulation and thrombolysis forms the mainstay of treatment while surgery is indicated in selected cases.